## Appendix (ii) Data Collection Plan

**Data Collection Plan**

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| Ethics reference number: **ERGO//17661** | Version: 1 | Date: 2015-10-08 |
| Study Title: Ultra-low-power exercise monitoring applications for sub-threshold micro-controllers | | |
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This study will be split in two main parts. Firstly, we will be collecting movement data which will be used to help us develop the algorithm for identifying exercises. This movement data is a combination of accelerometer data and gyroscopic data which we will receive from sensors connected to our device. This device will be strapped to different areas of the participants as they perform various exercises and we will record the movement data for each distinct exercise. These exercises are listed below and are performed while sitting down:

* Rotating both feet in circles both clockwise and anticlockwise
* Stretching arms by bringing them across the body in a cuddling fashion
* Pointing feet up and down
* Rolling shoulders forwards and backwards
* Stretching each leg by bringing each knee up to the chest
* Bending down by moving hands down legs towards ankles

We will also ask participants to walk around with the device so we can obtain movement data for normal walking and walking in narrow areas. The participants will be required to perform each one of these exercises in turn and for each one, the device will be positioned on their body accordingly to measure it. These positions will include the feet, ankles, legs and arms. By doing this, we will obtain movement data for each type of exercise which will help us develop the algorithm.

The second part of the study will be carried out once the algorithm has been developed. Here, we will test the algorithm by asking participants to perform the exact same exercises in the same manner, but this time we will be measuring the output of our own algorithm. This will be data including which exercise was performed and for how long. We will also measure which exercises the participants actually performed and precisely how long for so that we can compare it with the results from the algorithm to analyse its accuracy.

This data will be anonymous as it only includes movement sensor data, type of exercise and how long each exercise was performed which will not be linked to the participants.